REMARKS

Claims 1, 2, 4, 5, 7-13, and 15-23 were pending in the present application. Claims 1, 12, and 18 have been amended. No more claims have been added or canceled. Therefore, claims 1, 2, 4, 5, 7-13, and 15-23 remain pending.

Rejections Under 35 U.S.C. §112

Claims 1, 2, 4, 5, 7-13, and 15-23 are rejected under 35 U.S.C. §112 for indefiniteness. The Office Action contends that the structure of independent claims 1, 12, and 18 renders the claims indefinite. Applicant heartily disagrees. The claims were clearly limited to performing at least one of the recited steps, but further required that all of the remaining steps be performed, possibly by someone else. In other words, the claims were originally addressed to one who would attempt to circumvent literal infringement of the claims by performing fewer than all of the steps, and inciting another person to perform the remaining steps.

For the sake of furthering the present case to allowance, claims 1, 12, and 18 have been amended to satisfy the Patent Office. However, Applicant reserves the right to amend the claims to their original form and preserves the above arguments. Withdrawal of the rejections is respectfully requested.

Claim Rejections

Claims 1, 2, 4, 5, 7-9, 12, 13, and 15-20 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,504,546 to Cosatto et al. (hereinafter "Cosatto"). Claim 10 is rejected under 35 U.S.C. §103(a) as being unpatentable over Cosatto in view of U.S. Patent No. 5,652,670 to Hayashi (hereinafter "Hayashi"). Claim 11 is rejected under 35 U.S.C. §103(a) as being unpatentable over Cosatto. Claims 21-23 are also rejected under 35 U.S.C. §103(a) as being unpatentable over Cosatto. Applicant respectfully traverses these rejections for at least the following reasons.

Claim 1 recites repeatedly imaging the object to produce a first video and repeating steps c) – e) (i.e., determining, sending, and morphing) to produce a second video that <u>substantially corresponds to the first video</u>. Cosatto does not teach, disclose, or suggest these features.

Cosatto is addressed to two aspects of video animation: a) population of a database with an n-dimensional grid of bitmaps (col. 10, line 54 to col. 11, line 15); and b) creating a video animation by mapping phonemes to visemes (i.e., mapping bitmaps stored in the database to their corresponding phonemes) (col. 14, lines 24-31).

In aspect a), Cosatto discloses video recording a person "speaking a few short sentences to obtain all of the different mouth shapes," subsequently applying a three-step recognition system, extracting and normalizing face parts from the video sequences, and labeling and sorting the samples into the database. (See, e.g., col. 6, lines 50-59, col. 7, lines 27-39, and col. 10, lines 54-64.)

In aspect b), Cosatto discloses creating a string of phonemes from a text-to-speech synthesizer, calculating motion trajectories for facial parts, sampling the trajectories (e.g., at 30 times per second), selecting bitmaps from the database based on the sampled trajectories, and applying the bitmaps to a base face to form a video. (See, e.g., col. 12, line 35 to col. 13, line 34.)

In other words, Cosatto is addressed to creating a bitmap database based on an actual video of a human person, and subsequently creating a <u>fictitious</u> facial animation video from <u>input text</u>, where the fictitious video has absolutely <u>no relation or correspondence</u> to the actual video.

In sharp contrast, claim 1 recites repeatedly imaging the object to produce a first video and repeating steps c) – e) (i.e., determining, sending, and morphing) to produce a second video <u>that substantially corresponds to the first video</u>. Cosatto does not teach, disclose, or suggest these features. An advantage of these features is that an animation video that substantially corresponds to an actual video can be created without the need for all of the information contained in the actual video. Thus, in one embodiment, an actual video may be processed by a sender, and an animation video may be created by a receiver remotely connected to the sender via a low-bandwidth information line. Therefore, claim 1, and all claims dependent therefrom, are believed to be patentable over Cosatto.

Hayashi fails to cure the deficiencies of Cosatto. Withdrawal of the rejections is respectfully requested.

Claims 12 and 18 each recites providing a sender processor, providing a receiver processor, and sending the voice information from the sender processor to the receiver processor via an information line.

The Office Action contends that Cosatto discloses a communication line between a low cost PC and the image bitmap database. However, the image bitmap database is not a processor. Therefore, Cosatto does not teach, disclose, or suggest providing a sender processor and sending the voice information from the sender processor to the receiver processor via an information line.

Claims 12 and 18 each further recites recording voice information of a human. Further, claim 12 recites morphing the image based at least partially on the mouth image position data and a sound recognized in the voice information, and claim 18 recites creating a virtual video of the person speaking based at least partially on the plurality of images and a sound recognized in the voice information. As mentioned, Cosatto is addressed to creating an animation video based on a sound created from a text-to-speech synthesizer, not from voice information of a human.

Therefore, claims 12 and 18, and all claims dependent therefrom, are believed to be patentable over Cosatto. Hayashi fails to cure the deficiencies of Cosatto. Withdrawal of the rejections is respectfully requested.

The dependent claims contain further patentable features. For example, claim 7 recites identifying the plurality of third identifiable image points in the third image by point tracking. Cosatto does not teach, disclose, or suggest point tracking or anything similar.

Claims 21-23 recite additional patentable features. For example, claim 21 recites that the sender and receiver are located in different cities. Cosatto does not teach, disclose, or suggest these features.

Response to Examiner's Arguments

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First, the Office Action contends on page 11 that Cosatto discloses "e) Morphing or warping said image such that image position date of said identifiable image points of said image are adjusted <u>to approximately correspond to said object position data</u>." (Emphasis added.) Applicant respectfully disagrees. The "object position data" claimed in step (e) are not just <u>any</u> object position data – rather, they are object position data <u>determined from the first video</u>, as recited in step (c). Cosatto does not teach, disclose, or suggest this feature.

Cosatto discloses producing a video recording of a person to populate a database with an n-dimensional grid of bitmaps (col. 10, line 54 to col. 11, line 15), and then creating a fictitious video animation based on a text-to-speech synthesizer by sampling a calculated trajectory, selecting bitmaps from the database, and applying the bitmaps to a base face (col. 12, line 35 to col. 13, line 34). Cosatto further discloses morphing images in the fictitious video animation where the visual difference between samples is large. (Col. 13, lines 56-67.) However, the fictitious video animation has nothing whatsoever to do with the video recording of the person. In other words, the morphing that occurs in Cosatto is independent of the video recording of the person, and thus <u>must be independent of any object position data determined from the video of the person.</u>

Thus, Cosatto discloses morphing an image such that image data of the image are adjusted, but does NOT disclose morphing the image such that image position data of the identifiable image points of the image are adjusted to approximately correspond to the <u>object position data determined from the first video</u>. Cosatto does not teach, disclose, or suggest all elements of step e).

Second, the Office Action contends on page 12 that Cosatto discloses "f) Repeating steps c) – e) to produce a second video that substantially corresponds to the first video" because "the talking head thus created resembles very closely to the person who was originally recorded." Applicant respectfully disagrees. Neither the words "resemble" nor "person" appear in step (f). Step (f) does not merely require the first and second videos to "resemble" each other, or for "persons" portrayed in the first and second videos to "resemble" each other. Step (f) recites repeating steps c) – e) to produce a second video that substantially <u>corresponds</u> to the first video.

According to Merriam-Webster's Online Dictionary (www.m-w.com), "correspond" means "to be in conformity or agreement" or "to be equivalent or parallel." Consider a first video of a child acting in a school play, and a second video of the same child playing softball. In this example, the face of the child in the first video "resembles very closely" the face of the child in the second video, because they are videos of the same child. But in what sense do the first and second videos correspond? They don't. The two videos have nothing whatsoever to do with each other. Therefore, because the two videos are not "in conformity or agreement" or "equivalent or parallel," they do not substantially "correspond" to each other as recited in step (f).

Finally, step (f) also recites repeating steps c) – e) to produce a second video that substantially corresponds to the first video. In Cosatto, steps (c) through (e) (to the limited extent that Cosatto discloses their elements) are not repeated to produce a video. In other words, assuming *arguendo* that Cosatto discloses determining object position data of points on an object, sending these data, and morphing an image, it does not repeat these steps to produce a video.

Therefore, claim 1, and all claims dependent therefrom, are believed to be patentable over Cosatto. Hayashi fails to cure the deficiencies of Cosatto. Withdrawal of the rejections is respectfully requested.

Next, regarding claims 12 and 18, the Office Action contends on page 13 that Cosatto discloses "recording voice information of a human." Applicant agrees. However, Applicant's argument, presented in Applicant's Amendment and Reply filed August 9, 2005 and NOT addressed or rebutted by the present Office Action, is that claim 12 recites morphing the image based at least partially on the mouth image position data and a sound recognized in the voice information, and claim 18 recites creating a virtual video of the person speaking based at least partially on the plurality of images and a sound recognized in the voice information. As mentioned, Cosatto is addressed to creating an animation video based on a sound created from a text-to-speech synthesizer, not from voice information of a human.

Therefore, claims 12 and 18, and all claims dependent therefrom, are believed to be patentable over Cosatto. Hayashi fails to cure the deficiencies of Cosatto. Withdrawal of the rejections is respectfully requested.

Further, the dependent claims contain further patentable features. For example, claim 7 recites identifying identifiable image points by point tracking. Cosatto discloses selecting a closest grid entry (and associate bitmap) for each sample point, but does not disclose _identifying_ any image points by point tracking. Therefore, claim 7 is believed to be patentable over Cosatto. As another example, claim 8 recites that the predetermined proximity is chosen based at least in part _on an expected motion speed of the object_ and a refresh time between the first and second frames. Cosatto does not disclose, nor does the Office Action contend that Cosatto discloses, choosing a predetermined proximity based at least in part on an expected motion speed of the object. Therefore, claim 8 is believed to be patentable over Cosatto.

Fees and Conclusion

Applicant believes that he has paid for 20 claims, including three independent claims. Because the present application now includes 20 pending claims, including three independent claims, Applicant believes that no fee is due herewith. Applicant respectfully requests notification if additional fees are due.

Applicant respectfully requests entrance of the present amendments and a Notice of Allowance. If the Examiner believes that a telephone conference will further prosecution of the present case, the Examiner is invited to contact Applicant at the number indicated below.

Respectfully submitted,

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